Chapter 4 § 1

Classifying Triangles

Definitions :

Polygon – a closed figure in a plane.

Sides – segments of a polygon.

Vertices – endpoints that sides intersect at

Triangle – a polygon with three sides and angles.

Isosceles triangle – at least two angles have the same measure.

Equilateral triangle – a triangle that has all equal angles and sides.

Scalene triangle – a triangle that has unequal sides and angles.

Right triangle – a triangle that has one angle with a measure of 90°.

Obtuse triangle – a triangle that has one angle whose measure is greater than 90°.

Acute triangle – a triangle that has all the angles less than 90°.

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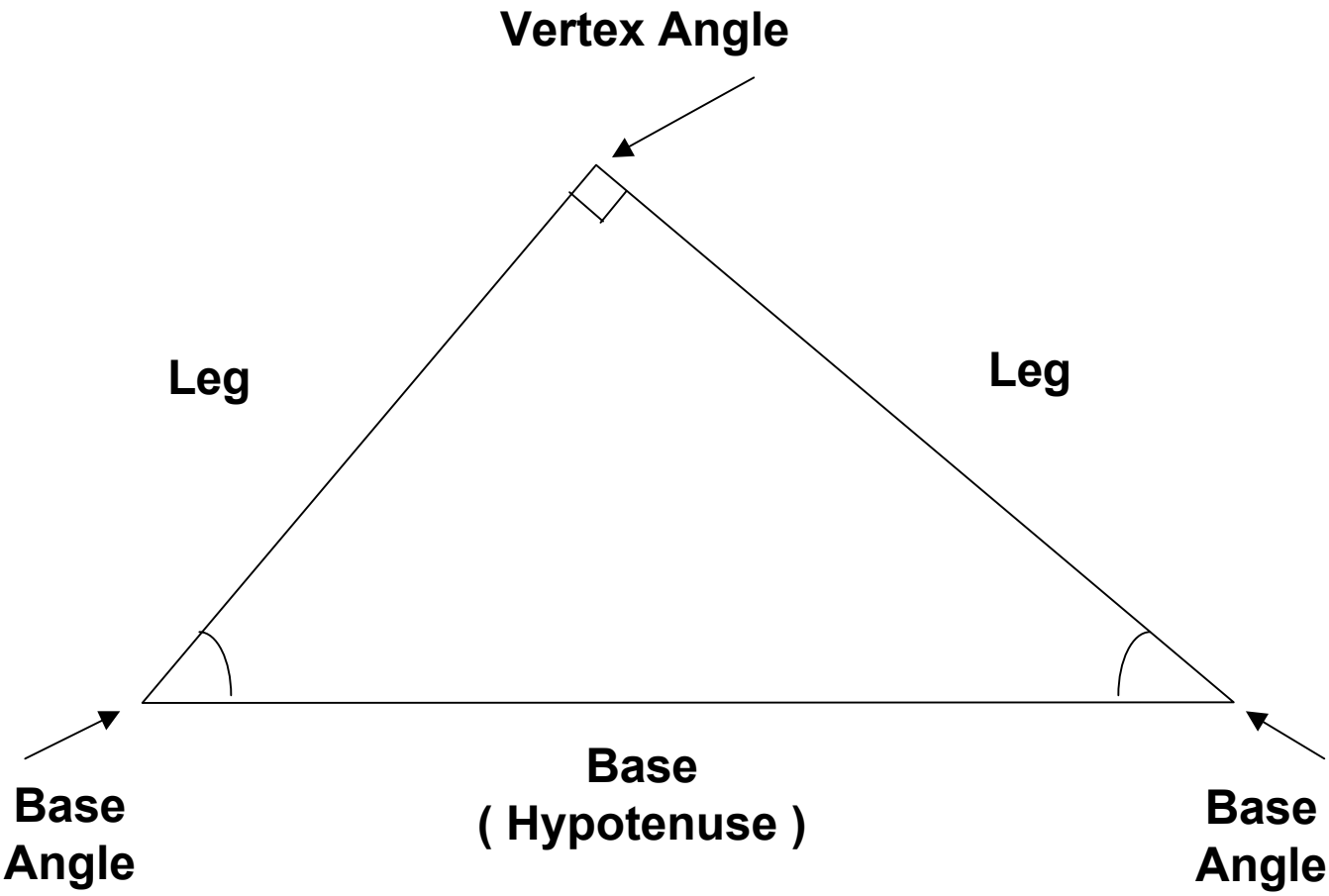
Parts of a Triangle



The sum of the interior angles of a triangle is 180.

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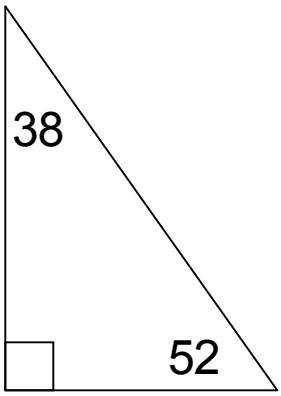
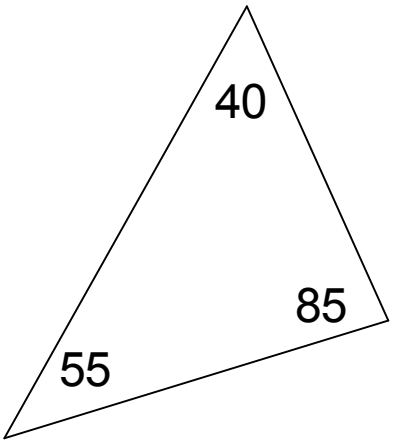
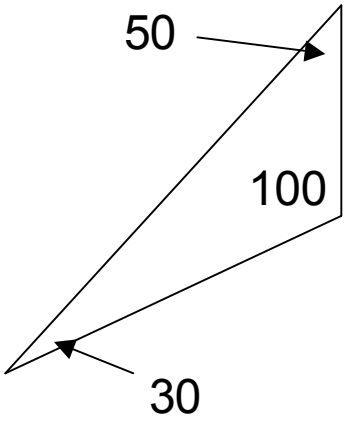
Angles



Right Triangle

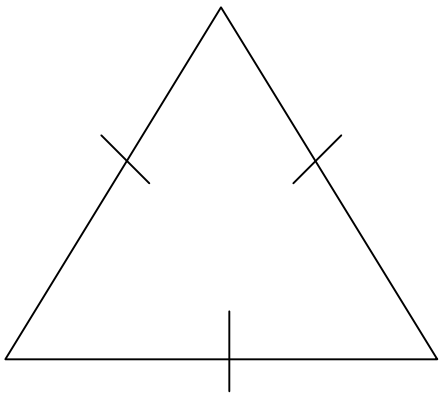


Acute Triangle

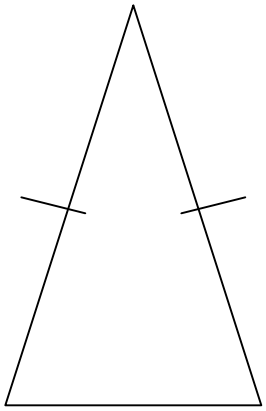


Obtuse Triangle

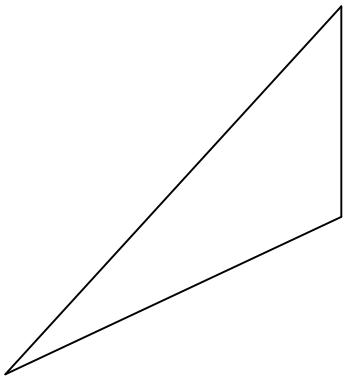
Sides



Equilateral Triangle



Isosceles Triangle



Scalene Triangle

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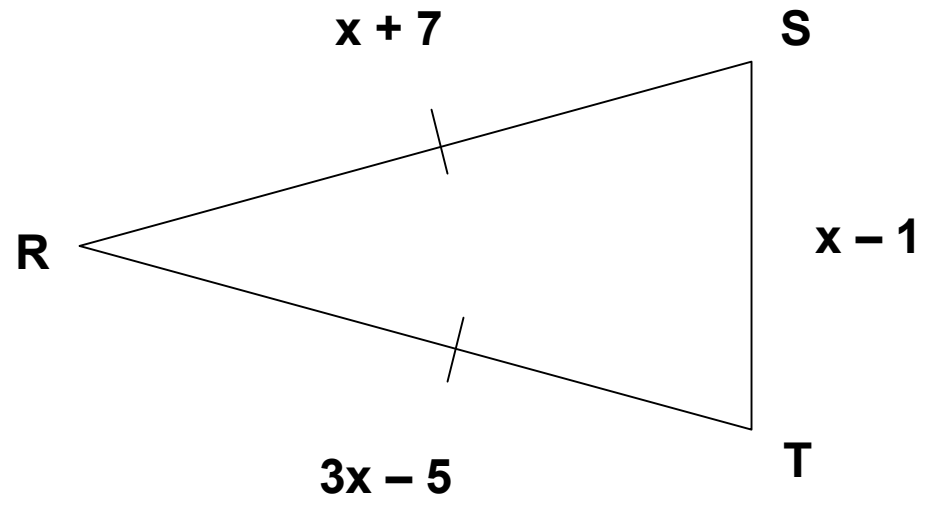
Find $\overline{RS}$, $\overline{RT}$, and $\overline{ST}$



$3x - 5 = x + 7$

$3x + (-5) = x + 7$

$-x \qquad -x$

$2x + (-5) = 0 + 7$

$+5 \qquad +5$

$\frac{2x}{2} + \frac{0}{2} = \frac{0}{2} + \frac{12}{2}$

$x = 6$

$\overline{RS} = x + 7$

$(6) + 7$

$= 13$

$\overline{RT} = 3x + (-5)$

$3(6) + (-5)$

$18 + (-5)$

$= 13$

$\overline{ST} = x + (-1)$

$(6) + (-1)$

$= 5$

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Given ∆DAR with vertices D(2,6), A(4,-5), and R(-3,0) determine the type of triangle.

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$\overline{DA}$

$$\sqrt{(4-2)^2 + (-5-6)^2}$$

$$\sqrt{(2)^2 + (-11)^2}$$

$$\sqrt{4 + 121}$$

$$\sqrt{125}$$

$\overline{DR}$

$$\sqrt{(-3-2)^2 + (0-6)^2}$$

$$\sqrt{(-5)^2 + (-6)^2}$$

$$\sqrt{25 + 36}$$

$$\sqrt{61}$$

$\overline{AR}$

$$\sqrt{(-3-4)^2 + (0-(-5))^2}$$

$$\sqrt{(-7)^2 + (5)^2}$$

$$\sqrt{49 + 25}$$

$$\sqrt{74}$$

Since all three line segments have different line measurements, then ∆DAR is a scalene triangle